

THE TOURISM INDUSTRY

MODULE 4



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Acknowledgements

The majority of the following material is excerpted or modified from:

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OVERVIEW

The involvement of the tourism industry is essential for sustainable tourism to succeed. Tour operators, hotels, cruise ships, and recreational activity providers can all make substantial differences by using environmentally sound management practices.

The tourism industry is multifaceted and consists of a large variety of tour operators, hotel operators, cruise ships and recreational activity providers. Tour operators can have a particularly large impact since they influence tourists' choices to go to a particular destination, and they contract with many other operators (hotels, recreation, etc.). Tour operators who run their own tours can make a big impact by hiring local guides, limiting group size, and including educational messages. Tour operators can also develop a "sustainable supply chain" of providers who adhere to sustainable practices.

Hotel location, design, and management practices all affect the ultimate impact of the hotel on coastal and marine resources. Site planning and design along coastlines must be very carefully planned to minimize shoreline erosion and vulnerability of buildings to storm surges and wave action. Once constructed, a hotel's daily management practices can contribute substantially to preserving the local environment and building ties with the local community, while at the same time saving money for the hotel operator and enhancing the tourist experience. Cruise ships have particular impacts at ports and via waste dumping at sea, and off-ship excursions by the tourists can affect coastal and marine areas. Recreational activity providers are at the forefront of tourists interacting with the environment, and can directly act to minimize damage to coral reefs, harassment of wildlife, and other impacts by educating staff and tourists.

A zoning system can ensure that tourism activities take place at a sustainable level that maximizes benefits and limits negative impacts. In addition, zones can be used to separate different incompatible uses and to minimize user conflicts.

LEARNING OBJECTIVES

- ✓ Understand the role of all segments of the tourism industry in sustainable tourism
- ✓ Become familiar with environmentally sound management practices for tour operators, hotels, cruise ships & recreational activity providers
- ✓ Understand the concepts, usefulness, and trade-offs of sustainable supply chains
- ✓ Understand how construction can cause beach erosion, and methods to avoid it
- ✓ Develop guidelines for hotels, cruise ships, and recreation in your MPA
- ✓ Understand how zoning can be used to concentrate environmental impacts in small areas, spare "sanctuaries" from environmental disturbance, and separate user conflicts



LESSON PLAN

4.1 TOUR OPERATORS & SUSTAINABLE SUPPLY CHAINS

Handout 4.1 - Tour Operators' Initiative Pamphlet

In the last module we focused on the role of the local community in sustainable tourism planning and management. Today we will focus on another major group of stakeholders: the tourism industry itself. Engagement of the tourism industry is key for the success of any sustainable tourism plan. The tourism industry is primarily responsible for the siting and design of tourist facilities, the environmental impacts of those facilities in water, energy, and waste outflow, the type of local jobs and treatment of local employees, the types of activities offered to tourists and environmental impact of the tours, and, ultimately, the tourists' choice of destination. However, the tourism industry is not a single entity. It is composed of a multitude of small and large businesses, engaged in very different enterprises. The needs, viewpoints, and impacts of all the different sectors of the tourist industry should be considered, to the extent practicable.

In this section we consider the role of tour operators. Later today we will look at three other major segments of the tour industry: hotels, cruise ships and recreational activity providers. Whether or not these tourism sectors impact your MPA right now, they likely affect nearby communities and may encroach on your MPA in the future. For effective long-term planning, it is important to understand all of the environmental impacts of all sectors of the tourism industry, both within and outside the MPA.

Sustainable Tourism Guidelines for Tour Operators

Tour operators are in a key position to have enormous impacts on tourists' choice of destination and of the type of tours and activities that are promoted for a certain area. Many tour operators are already part of voluntary initiatives to promote sustainable tourism (for example, the Tourism Operators' Initiative, www.toinitiative.org). Promotion of sustainable tourism makes good business sense in the long run for tour operators, because sustainable tourism can be carried on indefinitely without degradation of the tourist attractions, and in addition, tourists are often more satisfied with their experience and are more likely to bring repeat business to the tour operator.

Tour operators can make great impacts via their own management practices. Operators who run their own tours can follow the management guidelines such as those listed below. Tour operators who sub-contract to other providers can use sustainable supply chains (see below) to ensure and encourage sustainable practices by every provider, contractor and supplier involved in the tour experience.

Tour operators can also help monitor the ongoing success of a sustainable tourism operation in an area, by surveying tourists after their visits to ask them about such issues as pollution, damaged habitats, poverty, etc. If the local authorities are alerted by tour operators that tourists have negative perceptions about the destination, they may be encouraged to address the underlying issues.



Some management guidelines for tour operators:

- ***Select appropriate destinations*** - Tour operators make careful choices about which destinations to take tourists to. They may not be aware of the environmental vulnerability of certain destinations, or about other more sustainable destinations that may be just as, or more, attractive to tourists. Throughout the assessment process, the MPA manager, local community, and tour operators can all help inform each other about which destinations to focus on.
- ***Reduce impacts in sensitive environments*** - Certain environments are particularly vulnerable to tourist-caused damage or tourist-associated construction. Tour operators need to be alerted to which environments locally are most sensitive, such as mangrove forests and coral reefs (we will discuss these more in the recreational activity section).
- ***Limit group size*** - Some sensitive or very popular habitats may still be suitable for tourism if visitor group size is limited. Though this reduces client numbers per tour, tourists often appreciate the more intimate experience and personalized attention of smaller groups and less crowded environments, and are typically willing to pay more.
- ***Hire local guides, use local suppliers, and treat them fairly*** - Whenever possible, local guides & suppliers should be used. This may require guide-training programs in such areas as history, wildlife biology, botany and languages. Guide quality is often ranked by tourists as the most important feature of a nature tour. Also note that when using local staff, it is essential to pay staff fairly and treat them well.
- ***Build awareness and educate tourists*** - Tour operators can help educate tourists, by handing out brochures and/or having guides describe the conservation and cultural issues of the local area. Most tourists want to learn about the local environment and culture, especially if the information is presented in an interesting way.
- ***Contribute to conservation & local community*** - Tour operators can donate a portion of proceeds to local conservation activities and to local community needs such as schools, clinics, etc., and can set an example by using conservation measures in their own offices (recycling, etc.)

Case study 1: Eutrophication in Italy - tour operators pressuring for change

The municipalities of Rimini in Italy, located in the Mediterranean and heavily dependent on tourism, experienced overdevelopment and environmental degradation throughout the 1970's and 1980s. Coastal eutrophication of the Adriatic Sea led to algal blooms and heavy fish mortality in 1985, with ensuing odors and pollution causing tourism losses. The tourism industry pressured local authorities to engage agribusinesses and hotel chains to reduce use of fertilizers and improve waste and sewage management. The environmental improvements were accompanied by public awareness and marketing campaigns to improve the city's image, and visitor numbers increased.

Case study 2: Side, Turkey - tour operators focusing on a destination

The Tour Operators' Initiative for Sustainable Development (TOI) is a voluntary initiative by primarily Europe-based tour operators who are seeking to encourage sustainable tourism in the destination countries that they patronize. TOI members recognize that they cannot achieve their sustainability goals without working in partnership with stakeholders in the destinations. Side, on the southern coast of Turkey, was the first destination in which TOI members forged a partnership



with local stakeholders. TOI members and their local partners bring approximately 300,000 tourists to Side annually.

To begin, local stakeholders and TOI members were interviewed for their opinions on key sustainability issues. These interviews were followed by a workshop in 2002, organized by one of the TOI members (Vasco Travel) and TUDER, the local hotel association. The meeting was attended by the mayor of Side, the local chamber of commerce, local hotel owners, local tour operators, and local travel agencies; representatives of WWF Turkey, UNEP, UNESCP, and WTO; and TOI members. This is a good example of the mix of stakeholders that should be included at planning meetings.

The meeting gave the opportunity for all members to share their views. They agreed on the importance of a continued dialogue between tour operators and local stakeholders, and agreed on three priority issues:

1. Waste management, with a focus on separation and recycling.
2. Education and training for sustainability in hotels, bars and restaurants.
3. Promotion of Side's culture and cultural activities

During follow-up meetings, a detailed plan of action was developed and a locally based coordinator was appointed, financed by the Side administration and by TUDER, the local hotel association. In the two years since, activities included design and implementation of waste separation schemes, coordination with recycling companies to schedule pick-ups of recyclable waste at local hotels, placement of used-battery containers in hotels and schools, and training sessions on solid waste management and recycling for managers and staff at hotels, restaurants, sanitation workers. Over 100 hotels and all local shops and restaurants now participate in the scheme. Data are promising: 276 tons of inorganic waste and 11,978 batteries were collected, and a new land fill was approved and is under construction.

Note that in this example, tour operators and local representatives together identified on a very specific issue - waste management - and then took concrete, practical steps to improve waste management throughout the town.

Case study 3: Peru Treks & Adventure - the impact of a local operator

One of the most popular tourist destinations in all of the Americas is the ancient Incan city of Machu Picchu in the Peruvian Andes. Over the last twenty years, the 4-day "Inca Trail" hike from Cuzco through the Andes to Machu Picchu has become extraordinarily popular. It is perhaps the most popular overnight hike in the Western Hemisphere, and offers an interesting example of a carrying capacity problem because massive numbers of tourists overwhelm the limited resource, **but the local operator can make an important contribution towards solving it.** Though this tourist example is in a mountain rather than marine environment, the general principles, of carrying capacity and fair treatment of local staff, are applicable to marine environments as well. The main message of this example is the attention a local tour operator can give to fair treatment of local staff, and contributions to the local community. See the accompanying handout for details:

Handout 4.2 - Peru Treks & Adventure

Case study 4: Lastovo - developing a small island destination

WWF and TOI have forged a partnership to support biodiversity conservation in areas of high-volume tourism. In 2004, they sponsored a joint workshop for sustainable tourism in sensitive marine areas. Both WWF and TOI share concerns over the environmental effects of tourism at



popular coastal destinations. Negative effects include hotel construction which infringes environmental guidelines and causes destruction of important habitats, while increased sedimentation from surface-water outflows via rivers and drains can damage warm-water corals, which are particularly sensitive to water clarity levels.

At the same time, it was appreciated that not all adverse impacts on sensitive marine biotopes are caused by tourism, and that the passengers handled by high-volume tour operators are not the sole cause of tourism-related impacts. In particular, it was noted that with the availability of cheap, Internet-booked flights and an increasingly sophisticated traveling public, FITs ("free, independent travelers") make up an increasingly large segment of the total market, while certain important niche markets for marine tourism (particularly dive tourism) have an especially high proportion of FITs. Furthermore, a significant proportion of visitors to coastal destinations are domestic tourists, originating from within the destination country, and statistics for this group are often either non-existent or unreliable. The attitudes and behavior of these categories of travelers are clearly not susceptible to influence through international tour operators, and will need to be tackled through other channels.

As the first 'pilot project' the partners selected the island of Lastovo, on the Dalmatian coast of Croatia, which has been proposed as a Marine Protected Area to the Croatian government. In September 2005 a 'Sustainable Tourism Day' was organized on the island of Lastovo for the local community. Participants included over 30 representatives of the local community. The TOI team was composed by representatives of Aurinkomatkat, LTU Touristik, TUI AG and First Choice/Sunsail. WWF Germany, representing the WWF International tourism network, the Mediterranean Program and SUNCE also participated as main organizers.

Recommendations from this meeting included:

- **Create a network to link the many small tourism related services on the island.** An incoming agent would then coordinate all the elements, including private apartment rentals, hotel, bars, restaurants, car and bicycle rental, dive operators, as well as providers of agricultural and fisheries products into a tourism package, and then sell it to outbound tour operators. The outbound operators would find this much more efficient than having to deal with individual small operators.
- **Aim for one or two target groups of tourists.** The tourism market is highly segmented, with each segment having different and often conflicting requirements. The segments include sun & beach; fun & action; nature & outdoor; culture & education; families; traditional repeat tourists; and individualists. Rather than trying to serve them all, which would be a mistake given the island's small size, define which groups can be best served by the unique attractions of Lastovo.
- **Offer high quality accommodation**, which will require the adoption of very strict health and safety criteria, for comfort as well as environmental reasons.
- **Attract nautical tourism** - e.g., yacht travel. This is already a very strong market segment for the island. This could be improved by the establishment of mooring buoys, which will also prevent damage to the sea bed. In general yachters will be willing to pay for this. Rubbish removal service can be offered as part of the mooring fee, as well as providing good local food, nature and cultural excursions, and cultural events.
- **Assess the competition.** An island like Lastovo competes at the regional, national, and international levels. It is therefore important to define what would make Lastovo unique.
- **Assess & improve infrastructure.** Critical for the long-term sustainability of the tourism industry is the assessment and improvement of the island's fresh water supply, waste water management, sewage water treatment etc.



- **Realize that tourism development and conservation are allies.** Tour operators stated that, in their experience, areas that are declared protected typically experience an increase in tourism. Tour operators therefore strongly support conservation, and in particular the establishment of protected areas when necessary, as this will preserve the tourism industry in the long term.

Exercise: Assess the impact of tour operators in & near your MPA

Working in small groups, develop a list of tour operators, inbound (local) or outbound (international), who send tourists to your area. Are guided tours common in your area, and if so, are local guides used? If not, why not? What do tour groups do in your area? Could group size be limited? Are local tour operators aware of environmental and sustainability issues? Are they aware of the existence of the MPA, and do they make use of it?

Sustainable Supply Chains

Handout 4.3 - Tour Operators Products and Suppliers

Because most of the goods and services included in an arranged tour are provided by a supply chain of subcontracted companies, organizations, and agents, tour operators are not always in direct control of the environmental and social impacts of those products. For example, tour operators may send tourists to a cruise ship, hotel or recreational tour that does not use the management practices outlined above. Yet, a tour operator's choice of service suppliers, and their contracts with those supplies, can encourage suppliers to meet sustainability standards and report on progress made.

Working with suppliers to integrate sustainability into the supply chain can benefit tour operators, suppliers, customers and destinations. From a financial standpoint, improved sustainability can lower costs through greater operating efficiency, reduced waste generation, and reduced consumption of energy and water. Sustainability practices can also lead to increased revenue by generating more repeat business and attracting new business from customers who value good environmental and social performance. A strong positive reputation as a company that cares about sustainability issues, coupled with improvements to the quality of the tourism experience provided to clients, can result in increased customer satisfaction and loyalty, strengthened brand value, enhanced publicity and marketing opportunities, and better acceptance by local communities in destinations.

Good performance and a high-quality, sustainable product can also help a tour operator reduce the risk of conflict or problems with suppliers, governments, staff and local communities, and improve its status as a respected partner in destinations. This may mean enhanced access to key business resources such as capital, the ability to develop products to meet growing market demand, improved relationships with governments, and a motivated and loyal staff.

The costs and benefits of integrating sustainability criteria into the supply chain will vary for each company, depending on:

- Purchasing and contracting arrangements with suppliers;
- Availability of alternate suppliers in key destinations;
- Suppliers' current levels of sustainability performance and potential for change;
- Barriers to sustainability, such as external factors



- A company's main sustainability and operational concerns; and
- Resources available to implement and promote sustainability throughout the supply chain.

Large tour operators often encourage suppliers to join a sustainable supply chain by offering better marketing or advertising to those that join the program. This may take the form of certification programs or eco-labels (an icon, such as a green leaf, that advertises to tourists that that hotel is environmentally friendly). Certification programs and eco labels will be discussed in more detail in the next module. As an introduction, consider the following case studies.

Case studies

Let's look at how some **outbound tour operators** are establishing sustainable supply chains in their destinations.

Handout 4.4 - Sustainable Supply Chain Case Studies

4.2 HOTELS, RESORTS & OTHER LODGING FACILITIES

Introduction

Lodging facilities are the tourism industry's main local job generators, and the main users of local resources such as water, energy and land. They require significant infrastructure (roads, energy, water and sewage facilities). They are the cornerstone of coastal tourism, because without adequate accommodation, very few tourists will visit coastal areas, particularly rural coastal areas.

Most hotels are independently owned, medium-scale enterprises. Since hoteliers have invested their assets in a particular site, they have a particularly strong stake in the long-term sustainability of the surrounding environment. ***In addition, most management practices that will reduce a hotel's environmental impacts will also immediately reduce its utility costs.*** For both reasons, the hotel industry is often very active in community outreach and in social and environmental sustainability, and hotel owners are often very willing to participate in sustainable development planning.

A primary step in a hotel's impact on the environment is simply where it is located. Often, the largest construction planned near the shoreline of an MPA will be a hotel or other lodging facility. MPA managers may become involved in this process if hotels are to be sited in or near the MPA, and should also be aware of general environmental considerations if other hotels are to be planned close to the MPA. Site selection by resort developers is too often focused simply on finding a spot along the shoreline where guests can have quick, easy access to the beach and scenic views of the sea. However, available infrastructure, sewage treatment, water supplies, etc., may not be sufficient to support the site.

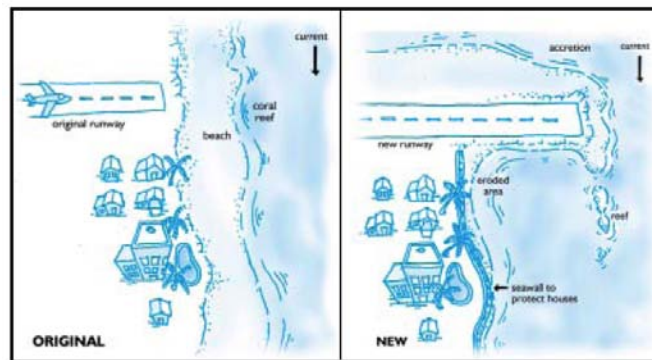
Of particular importance in the initial site selection is the simple question: How close will the hotel be to the high-tide line? Construction too close to the waterline can cause such drastic problems that we will devote the next section to this issue.



Coastal Construction, Shoreline Erosion, and Setbacks

Coastal construction too close to the waterline has three major problems: The construction facilities will be highly vulnerable to wave and storm damage; there is an increased risk of pollution of nearshore waters; and the construction can cause the beach to erode away.

MPA managers should pay special attention to any planned structure that may interrupt the normal movement of sand along a beach, because this will inevitably cause build-up of sand on the up-current side, and erosion of sand on the down-current side. The following figure shows the consequences of poorly planned changes in shoreline, leading to complete loss of a beach:



Source: *Managing Impacts of Development in the Coastal Zone*, 2001

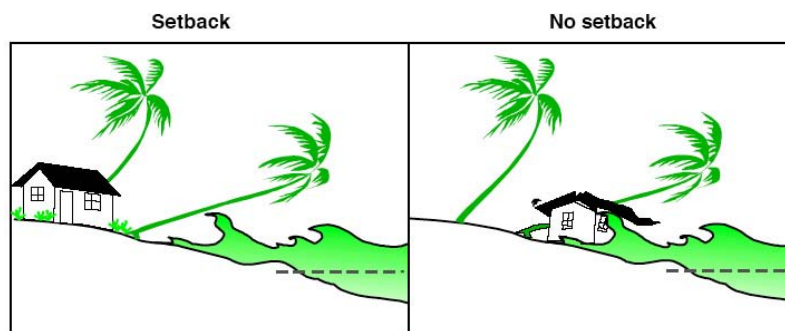
Any construction that modifies the shoreline will invariably change currents, wave action, tidal fluctuations, and the transport of sediments along the coast. Beaches can erode away if development is sited inappropriately.

Obviously it would be best to simply avoid construction that near the coast. However, in some cases, tourist infrastructure may require major construction along a shoreline.

Setbacks

A *setback* is a prescribed distance away from a particular landscape feature, with no permanent development of any kind permitted within this area. The use of setbacks is perhaps the single most useful guideline for coastal construction.

It is of paramount importance that hotels & other large structures be sited with generous setbacks from the high-tide line.

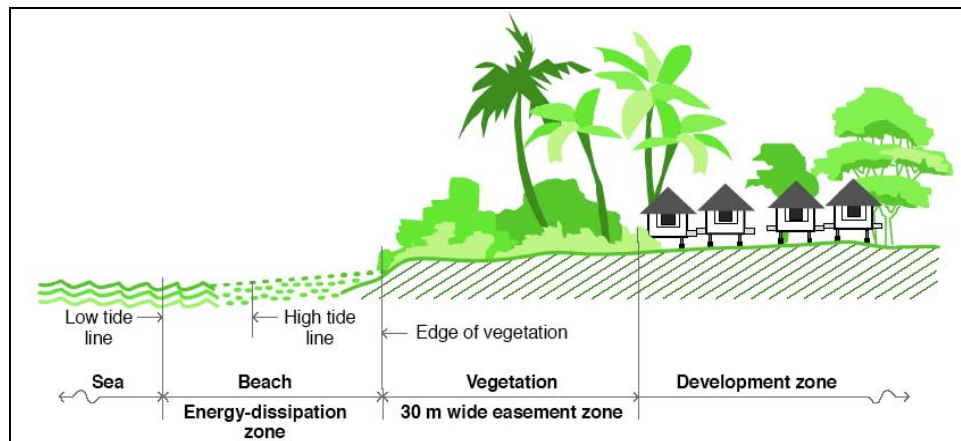




Source: Sustainable Coastal Tourism Handbook for the Philippines, 2002

If tourism structures are too close to the water's edge, they can be severely damaged or destroyed by large storm waves. For concrete or high-rise style resorts, the resort owners often install seawalls or other hard structures in an attempt to protect the buildings or trap more beach sand. These structures invariably prevent natural replenishment of the beach, and ultimately cause further beach erosion (see below). The net effect is a vicious cycle of beach erosion and increase in coastal fortifications, along with degraded aesthetics and increased costs for protection and artificial beach replenishment, which expands impacts to the other beaches where the new sand is taken from. In retrospect, a good resort plan could have avoided these environmental and economic problems in the first place, by requiring all permanent structures to be set back far enough inland so as not to be threatened by wave.

Setback regulations for coastal areas vary from country to country. For example, Indonesia requires a 100m shoreline setback for all buildings from the mean high water line, and Tanzania requires 60m. Some countries like Sri Lanka allow for variable setbacks that depend on the section of coast and the rates of erosion, the types of structures to be constructed, and an overall appraisal of the site and its limitations. In the Philippines, setbacks from rivers, streams, lakes, and mean high tide level of seashores are 3m in urban areas, 20m in agricultural areas, and 40m in forest areas. As shown in this diagram, a setback may include a strip of beach above the high-tide line (part of the “energy-dissipation zone”), and also a band of natural vegetation above the beach (here shown as an “easement zone”). Preservation of this band of vegetation is important, as it limits erosion, and also buffers buildings from storm surges and storm winds.



Source: Sustainable Coastal Tourism Handbook for the Philippines, 2002

If you do not know the setback regulations in your local area, check with your national or regional regulatory agency or office to determine the setback and permitting requirements for coastal construction in your area.

Setbacks have other benefits besides preventing beach erosion and protecting buildings. These benefits include:

- Minimize public investment in coastal protection
- Protect and enhance the scenic value of coastal environments
- Minimize use conflicts among various types of activities taking place in the coastal zone
- Ensure public access to and along the coast
- Maintain consistency between national and local laws and plans
- Protect vulnerable habitats such as beaches, coral reefs and seagrass beds



- Provide buffer zones around coastal historical and traditional use areas.

"Hard" and "soft" solutions to beach erosion

Unfortunately, once beach erosion begins, it is often difficult to correct. Methods used to reduce beach erosion include **"hard" engineering solutions** that are permanent structures of hard materials designed to reflect or withstand incoming waves, and **"soft" engineering solutions** that gently absorb the incoming wave energy. Examples of hard engineering solutions are seawalls, bulkheads, groins and jetties (see handout). Soft engineering solutions often simply involve good planning (i.e., preservation of natural shoreline vegetation), and sometimes removal of structures to allow natural wave action and natural sand transport to help restore the beach. More recently, soft engineering solutions also include **"living shorelines"** that involve planting seagrass beds and other native wetland plants, installing bio-logs of coconut fiber, creating oyster reefs, etc., that naturally protect the shoreline.

Handout 4.5 - Hard engineering approaches

Soft engineering solutions are virtually always the better choice, because they retain the natural form of the shoreline and beach, and because hard structures, paradoxically, usually accelerate sand losses, especially in down-current areas. Hard structures also tend to cause wave forces that result in eventual destruction of the structures. Thus, once hard structures are in place, they are costly to maintain, difficult to remove to correct a mistake or to adapt to new changes, and they will almost always cause increased erosion elsewhere.

The best solutions will be those that are based on a thorough understanding of local wave action and tidal flux. Thus, it is important to work with coastal construction experts to determine the best shoreline stabilization method based on the local wave energy and sand transport occurring at that particular site. In all options of protecting coastal areas from erosion, the science is highly imprecise and costly. Engineering studies, permits, building materials, construction, and long-term maintenance of the beach structure can be very costly, depending on the structure and the erosion forces of the area.

The only method of avoiding these costs is not to develop on beaches.

Additional Guidelines for Hotel Site Selection

Distance from the shoreline is not the only factor in hotel site selection. Additional important guidelines include:

- Avoid sensitive environments such as mangroves, rain forest, or steep slopes; be particularly aware of beach erosion (we will discuss this more tomorrow).
- Seek local knowledge on the environmental, cultural & social importance of the site
- Avoid potential user conflicts, such as with local residents who traditionally use that area for fishing, etc.
- Concentrate coastal development in nodes, rather than a thin ribbon spread along the entire coast
- Assess proximity to basic infrastructure, such as electricity, roads, water, solid & liquid waste disposal



- Ensure that local residents still have easy access to and along the beach

Once the general site has been selected, a detailed site plan should be drawn showing the exact location of all facilities (reception areas, guest rooms, swimming pools, parking areas, etc.). This will help with planning for:

- Setbacks and buffer zones to ensure free access to beach and protect sensitive areas
- Clustering to centralize infrastructure & preserve open spaces
- Aesthetically pleasing design
- Sustainable use of local products and materials

Water sources must be carefully assessed during hotel site selection. Water wells may be needed; as a general guideline, place them away from the beach to minimize salt water contamination, and away from the hotel's septic tanks. (Detailed well and septic tank placement guidelines can be found in the 2001 "Guidelines for Coastal Tourism Development in Tanzania"; see citation at beginning of this module.)

Wastewater treatment facilities are often virtually non-existent along rural coasts, and tourist developments will usually need their own septic tanks or other waste treatment systems. Septic tanks need to be sited carefully to avoid contamination of nearby water wells and to avoid sewage leakage to the ocean.

Case Study: Hotel Water Needs in Pulau Redang, Malaysia

Before development on the island of Pulau Redang, Malaysia, an environmental impact assessment predicted that major resort development would result in depletion of freshwater supplies, slope erosion and the destruction of the surrounding coral reef (marine park). Although the EIA recommended significantly limiting development and placing restrictions on building in steep areas, these recommendations were ignored and major resorts were developed, not surprisingly causing the predicted impacts. Freshwater resources on the island have been overused, resulting in saltwater intrusion and contamination and forcing the government to propose an expensive water pipeline from the mainland to meet tourists' needs. Furthermore, slope erosion has destroyed terrestrial ecosystems and choked the surrounding reef, resulting in significant species loss, the clouding of previously clear waters and a decline in the quality of the tourism product.

Source: Sustainable Coastal Tourism Handbook for the Philippines, 2002

Case Study: Maldives

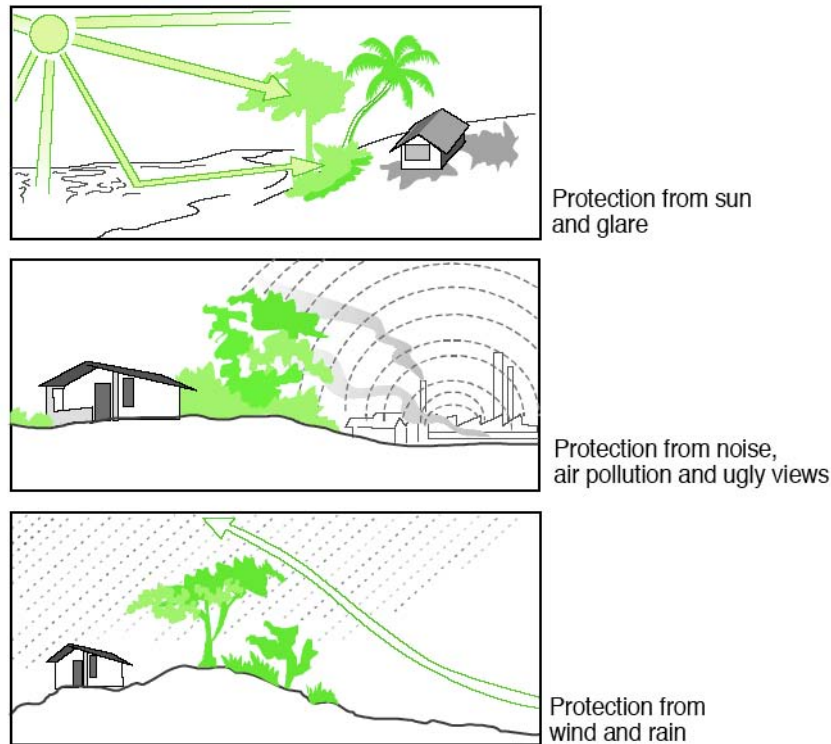
Handout 4.6 - Coastal Development Criteria in Maldives

Landscaping and Vegetation

A hotel's landscaping can add to a visitors' sense of place, and can also have practical environmental impacts, e.g. reducing electricity use and irrigation water use. Native plants and trees provide a sense of "getting away" for tourists, who often become quite interested in tropical flowers, palms, and birds. Vegetation also provides shade from the sun, helps minimize erosion,



provides privacy barriers between guests, and can even filter wastewater. Shading of lodgings by shrubs and trees can often reduce air conditioning energy use by about 20%.



Services provided by trees and vegetation to a coastal tourist facility

Source: *Sustainable Coastal Tourism Handbook for the Philippines, 2002*

Typically, developers completely clear vegetation during the construction process. Try instead to retain as much of the original vegetation as possible, and plant additional vegetation when construction is finished. If landscaping must be used to replace vegetation that was cleared during construction, plant selection will vary according to soil type, exposure to winds and saltwater, rainfall, contour of the land, and also with social aspects such as the type of tourist desired, privacy needs, and visual aesthetics. The cost of planting and of maintaining the vegetation, particularly the long-term water needs, must be considered. An overall plan should be developed with the consultation of someone who knows about vegetation and who is familiar with the physical constraints in a given area.

The following suggestions can help to increase the value of the landscape as well as to protect the natural environment from negative impacts of vegetation removal.

- Protect trees and shrubs from construction activities by fencing them off during construction or by transplanting smaller plants into on-site nurseries.
- Special care should be taken to preserve vegetation around lakes, ponds, and streams, as filters strips to minimize runoff of sediment and debris.
- Use indigenous species for replanting whenever possible. They are already adapted to the harsh environments of salt-spray, wind, sun, sandy soil, and they are also less water consuming.



- Be realistic about the design of the landscape in relation to the ability to maintain it.
- Minimize or completely eliminate the use of lawns.
- Root-balled trees are not good alternatives to leaving trees in place. They are expensive to transplant, are subject to sudden death, and take many years to establish themselves.
- Select trees and shrubs that root vertically and deeply, rather than species that root horizontally or shallow, to avoid damage to foundations, walkways, etc.
- Use flowering and fruiting species to attract birds, mammals, butterflies, etc.
- Use hardwood species so that there is less chance of damage to property or injury to guests from falling branches.
- Use species with graceful shapes that do not lose their leaves seasonally, but throughout the year.
- When using coconut, remember that these trees grow very tall and may pose a hazard from falling fronds and nuts.
- Consider mangroves as resort landscape features or for activity areas.
- Consider using “graywater” from shower drains and kitchen sinks to irrigate plants. If graywater is used, laundry and kitchen soaps should be biodegradable and have reduced phosphate.
- Water plants after sunset to allow maximum absorption of water.
- Group plants with high-water needs together.
- Design irrigation just to water plants, not concrete walkways and roads.

Finally, note that landscaping can make the hotel's setback from the shoreline an attraction. Tourism developers sometimes feel that setbacks decrease their establishment's desirability to tourists, but in fact the land between development and the beach can be enhanced and provide attractions to tourists. Many tourists come from countries where they have to spend months indoors avoiding the cold. When they travel to the tropics, they want to spend as much time as possible outside. The beach will always be an attraction, but open, landscaped spaces away from the water can be equally as appealing in providing:

- Shade from the sun and heat
- Places for artists and photographers to work
- An place to learn about and enjoy indigenous plants and birds
- Peaceful resting area with shaded hammocks, chairs, etc.
- Open space to enhance the view of the coastline and ocean.

Hotel Management Practices

Handout 4.7 - Hotel Water, Wastewater, Waste & Energy

Handout 4.8 - Hotel Planning Principles & Checklists

Once operational, a hotel can both save money and benefit the local environment with careful management of water & energy use, and environmentally sound policies for treatment of wastewater and solid waste (garbage). Simple changes in policy and staff training can produce cost-savings and benefit the coastal environment immediately. Other improvements may require investments in cost-effective appliances and repairs; these will typically pay for themselves within 3 months to a year, with further savings accruing in subsequent years. **Overall, hotels usually**



will reduce their utility costs by about 20-30% by using environmentally sound management practices.

Though it is not expected that an MPA manager will need to operate a hotel, MPA managers should be aware of the ways in which hotel management contributes to environmental impacts along the coast, and able to steer interested local hoteliers toward good information. Hotels that wish to implement best management practices should be encouraged to begin with a thorough evaluation of the hotel's current usage and policy, resulting in a detailed list of specific desired changes. The ideas below are excerpted from the "Toolkit" series from the Small Tourism Enterprises Project (STEP) in the Caribbean.

1. Water conservation

Tourist hotels require vast amounts of water for bathing, housekeeping, cooking, laundry, landscaping and swimming pools. Tourist consumption of water is usually many times higher than that of the local people. Studies show that in most hotels, a tourist will use between 40-100 US gallons of water per day. This can result in water shortages and degradation of water supplies, as well as increased wastewater discharge. The problem is particularly acute in hot, dry countries, where available resources can be in short supply, yet tourist demands on water (for swimming pools, showers, etc.) are high because of the climate. At large resorts, golf course irrigation can be a particular problem. An average golf course soaks up at least 525,000 gallons of water per day, which can severely affect fresh water availability in certain areas.

Water sources should be identified during site selection. Water wells may be needed; as a general guideline, place them away from the beach to minimize salt water contamination, and away from the hotel's septic tanks. *(Detailed well and septic tank placement guidelines can be found in the "Guidelines for Coastal Tourism Development in Tanzania" (2001); see citation at beginning of this module.)*

Water conservation is an easy win-win step for hotels to take, as it immediately reduces water costs. Small hotels often can reduce water use by 1/3 with simple steps such as:

- Regularly check water meters
- Check for leaks throughout the system, including main water lines
- Install water-efficient showerheads, low-flush toilets, and water aerators
- Inspect water use practices in irrigation systems, kitchens, and laundries
- Reduce laundry service to every other day unless guests opt for daily laundering
- Install foot-pedal valves in kitchens, allowing kitchen staff to quickly turn water on and off while hands are occupied. These usually pay for themselves in 3-12 months.
- Harvest rainwater for use in laundry, irrigation, etc.
- Irrigate the grounds with graywater or treated wastewater.

See the "Water Conservation" handout from the STEP series for details & more ideas.

Case Study: Resort Impacts in Pulau Redang, Malaysia

Before development on the island of Pulau Redang, Malaysia, an environmental impact assessment predicted that major resort development would result in depletion of freshwater supplies, slope erosion and the destruction of the surrounding coral reef (marine park). Although the EIA recommended significantly limiting development and placing restrictions on building in steep areas, these recommendations were ignored and major resorts were developed, not surprisingly causing the predicted impacts. Freshwater resources on the island have been overused, resulting in saltwater intrusion and contamination and forcing the government to propose an expensive water pipeline from the mainland to meet tourists' needs. Furthermore, slope erosion has destroyed terrestrial ecosystems and choked the surrounding reef, resulting in significant species loss, the clouding of previously clear waters and a decline in the quality of the tourism product.

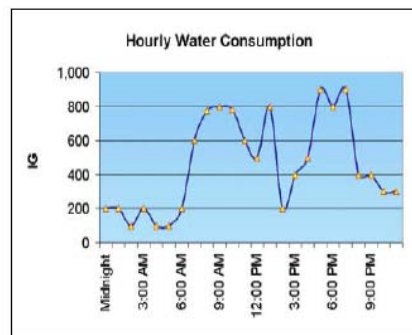


Source: Sustainable Coastal Tourism Handbook for the Philippines, 2002

Case Study: Undetected leaks

Hotels lose an astonishing amount of water, and money, to undetected leaks, particularly leaky toilets. On average, 40% of hotel toilets have leaks and other water-related problems. A typical case: a water conservation check at a 35-room hotel in the Caribbean found three malfunctioning toilets that together wasted 3900 gallons or US\$41 per day. These three toilets alone accounted for 40% of the hotel's water consumption. They were fixed by adjusting the position of two of the floats and replacing one damaged flapper valve; the repairs took 15 minutes and US\$5 worth of parts. Other cases: A defective drain valve on a washing machine at another hotel was costing US\$6000 per year of wasted water. A third hotel had a large underground leak that had gone undetected for a week because nobody was checking the water meter daily. During that one week the leak wasted US\$1700 of water. (Source: STEP Toolkit series, "Water Conservation")

Leaks can only be fixed if they are detected. This simply requires daily checking of water meters, and instructing staff to report leaks promptly.

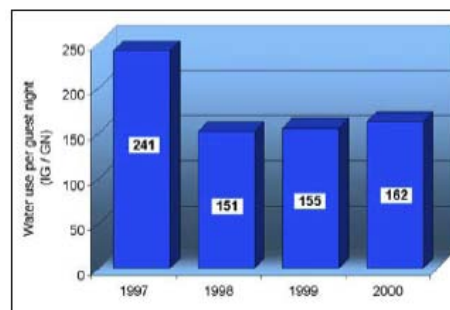


Determining your property's "hourly water consumption curve" is a great way to determine whether your property has leaks. If consumption is high in the middle of the night, that probably indicates the presence of leaks.

Case Study: Simple water conservation steps reduce costs

Treasure Beach Hotel, Barbados, adopted these changes and immediately reduced water use by 10%:

- Flow diverters and toilet dams.
- Low flow showerheads and faucet aerators.
- Sub meters for kitchen and irrigation.
- Daily meter readings.
- Water hoses fitted with control nozzles.
- Drip irrigation system controlled by a timer and a moisture probe.
- Towel and linen reuse program.



Sea Splash Resort, a small property in Jamaica, conducted an environmental assessment in 1997 and reduced water consumption by 35% ever since.



2. Wastewater management

Wastewater treatment facilities are often virtually non-existent along rural coasts, and tourist developments will usually need their own septic tanks or other waste treatment systems. Care should be taken in the design and placement of the septic systems, particularly with regard to sources of freshwater; see the accompanying handouts for details.

Handout 4.9 - Septic Systems

Handout 4.10 - Water Wells

Wastewater is simply any water that has been used and is no longer pure. It includes human sewage from toilets, scraps and grease from kitchen sinks, and “graywater” (water that has been used, but that does not include toilet waste or kitchen waste. It usually has been used for washing - in sinks, tubs, showers, or laundries - and appears gray). Wastewater also includes industrial wastewater from factories, shops, etc.; and storm water, flood water, etc that enters the water system through the soil or drains.

Wastewater is often overlooked by hotels, often because of a lack of understanding of potential problems, a lack of appreciation of the need for continual maintenance and monitoring of sewage equipment, as well as by a tendency to consider wastewater treatment a “menial” task to be delegated to lower-level staff.

A particular problem in tropical resorts is poorly treated or non-treated wastewater, particularly raw sewage, polluting beaches and coral reefs. This can cause growth of seaweed and algae that can smother the coral reefs, can create foul smells on beaches, and can spread disease. To avoid this problem, most coastal hotels need their own septic tanks. Many do have them, but may not appreciate the need to site them correctly, and monitor the tanks and outflow field for blockages. Another common problem in small hotels is the excessive grease from kitchens and cleaners, which can clog septic systems.

Some management tips:

- Inspect site placement of septic tanks (e.g., far from water wells)
- Use graywater for laundry re-use or irrigation.
- Treated wastewater can also be used for irrigation - but be absolutely sure it is treated correctly and is safe for animals and children.
- Clean grease traps of kitchen sinks once a week.
- Use bioaugmentation (bacterial cultures that break down grease) in grease traps.
- Minimize use of harsh bleaches and other harsh cleaning chemicals; they will kill bacteria in the septic tank and slow the septic process of waste filtration.

3. Solid waste management

In many tropical resort areas, hotels and resorts produce more solid waste (garbage, trash, etc.) than all the local residents combined. In some cases, poor waste management results in garbage washing up onto the beaches and contaminating the coastal waters, threatening the very attractions that lure visitors.

The cleanliness of beaches can be a major factor in tourists' decisions to return to the area, or to recommend the area to others.



Other costs of poor waste management include: odors, infestation by rats and other vermin and their associated diseases, pools of stagnant water that breed mosquitoes and their associated diseases (dengue fever, etc.), physical injury to workers & guests, and fire hazards.

Improved waste management is beneficial to fragile coastal ecosystems, and protects the natural beauty that tourists and locals both enjoy. In addition, hotels can save on manpower for waste hauling and landfill tipping, can gain revenue from recyclables, can reduce insect, rodent and fire-hazard issues, improve community relations and increase guest satisfaction.

Reduce, Re-use, Recycle

Most waste can be enormously reduced with the simple guidelines of “Reduce, Re-use, Recycle.”

Reduce: minimize use of unnecessary packaging, plastic bags and other disposable items; use cost-effective home-made alternatives to harsh glass cleaners, pesticides, etc.; buy supplies in bulk; provide coffee mugs instead of paper coffee cups; etc.

Re-use all possible items (scrap paper for notes, scrap lumber, etc.); donate old furniture and soap ends to the local community for re-use; etc.

Recycle all possible materials such as paper, plastics, aluminum and glass. In rural communities, recycling capacity is often low, but local communities and governments may be able to start simple recycling schemes. Organic garden and kitchen waste can be composted for use as garden fertilizer (typically, about 60% of hotel solid waste is organic waste.). Buy products made from recycled materials whenever possible.

Case studies: Simple steps to reduce solid waste at 2 resorts

Concordia Eco-Tents (US Virgin Islands) implemented these changes:

- Composting low-flush toilets use minimal water and produce valuable fertilizing materials.
- Aluminum recycling receptacles are located next to all trash bins.
- Upon departing, guests leave food, suntan lotion, etc. on the “Help Yourself Shelf” where they are available to incoming guests.

Casuarina Beach Club (Barbados) implemented these changes:

- Yard waste is put through a chipper machine and then composted.
- Toilet tissue is a recycled product.
- Many drinks are now on tap as opposed to individual bottles, and the use of straws is restricted. Reusable plastic glasses are also used in preference to disposables.
- The use of plastic bags, plastic wrap and foil is minimized, and 100% biodegradable plastic bags used when necessary. Garbage bags are replaced only when soiled and reusable cloth bags are available in the hotel's Mini-Mart.
- “Ends” of soap are taken to the Salvation Army and old furniture/soft furnishings are given away to the needy.

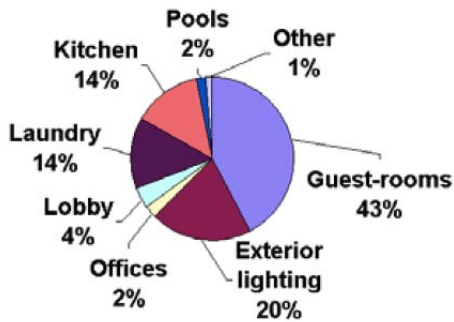
4. Energy use

At a typical small tropical hotel, guestrooms use approximately 40% of energy use. The majority of this is air conditioning. In such hotels, ***an investment of approximately US\$20-30 per room in energy conservation will usually yield an annual savings of US\$100 per room.***

Investments in solar and wind power, while requiring a considerable investment up-front, may result in large long-term savings as well.



Breakdown of energy use by area at a typical small property



Note the high energy use by guestrooms - primarily air-conditioning.

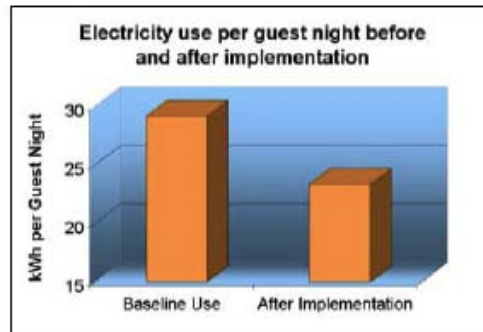


Figure 2. Energy use per guest night before and after implementation of energy conservation measures at Blue Waters Inn.

Simple steps to take include:

- Install door sweeps & weather strips on all windows and doors
- Caulk all wall openings
- Make bathroom doors self-closing (so that cool air doesn't escape through window)
- Install occupancy sensors that automatically turn off security lights & restroom lights
- Use energy-efficient light bulbs (compact fluorescent, LED, etc.)
- Minimize use of air conditioning, such as: install guestroom controls that turn off AC when the guest is not there; turn off AC while cleaning.
- Frequent servicing of air conditioners & seals on doors, windows, freezers, etc. (replacing belts, cleaning filters, repairing ducts, etc.) will often result in a 20% energy savings
- Use timers to turn off pool pumps, AC in offices, etc.
- Use ionizers to remove scale buildup in hot water heaters
- Use heat recovers that use waste heat from AC units to heat water
- Landscaping to use trees as natural shade for buildings.



Hotel Off-site Activities & Community Relations

Hotels should, obviously, always seek to maintain good relations with the local community. The most important aspect is simply to maintain open lines of communication from the beginning. Use local employees and local materials whenever possible. Hotels can also work with local communities to identify sources of locally produced supplies and also handicrafts and artwork. Training may assist local villages in producing particular handicrafts that will be marketable to tourists. Hotels can assist local people in developing village or cultural tours. This helps create a comprehensive tourism destination that can only improve the business prospects of the hotel in the long-term.

Hotels are the base from which a tourist engages in other nearby activities, such as water recreation, tours, shopping at local markets, etc. It is the responsibility of all stakeholders, including the local hotel management, local authorities and villages, to ensure that these excursions are positive ones, for the locals and the tourists alike. Guiding principles:

- Tourists should be encouraged to go on excursions to nearby attractions
- Tourists' activities should contribute to the local economy
- Tourists should enjoy a safe, clean, and hassle-free environment.
- Carrying capacity levels and codes of conduct should be adhered to
- Attractions must be maintained and developed

Exercise: Develop hotel guidelines for your MPA

1. In small groups, discuss the hotel practices of your own area. Do you know the energy, water, wastewater, and garbage practices of local hotels in your area? If not, how could you find out? What would be the most effective way in your area to encourage local hotels to implement environmentally sound management? Are there other important practices, besides the ones listed below, that you think would benefit your area?

2. Using the ideas you have discussed, draw up a list of recommended site selection guidelines and management practices for hotels in your area.

4.3 CRUISE SHIPS

Growth of the Cruise Industry

Since 1980, the cruise ship industry has grown annually at a rate of 8.4% - nearly twice as fast as tourism in general. It is expected to continue growing at this rate throughout this decade. Much of this growth has occurred as cruise lines redefined their market from being exclusive journeys to being entertaining vacations for everyone.

<u>Year</u>	<u>Number of passengers worldwide</u>
1970	500,000
1998	9.5 million
2010	14.2 million (estimate)



Most cruise business worldwide focuses on Alaska and the Caribbean, but cruises occur worldwide. Most major cruise lines currently offer many cruises in Southeast Asia. MPA managers should keep aware of the locations of the nearest cruise ship ports, the major cruise ports throughout Southeast Asia, and of any plans to build new ports.

Three major cruise line companies comprise nearly 2/3 of the market - Royal Caribbean Cruises, (with 23 ships), Carnival Corporation (43 ships), and P&O Princess Cruises (18 ships). Though this may sound like a relatively small fleet, each of these ships represents a floating city with thousands of passengers, and the aggregate environmental impact can be large.

Cruise ships have large impacts at ports, where their numerous passengers disembark. Tourist attractions, restaurants, retail shops, and shore businesses all may benefit financially by tourist visits. Tourists may also take day trips to nearby attractions, with concomitant environmental and cultural effects. (See the "Recreational Activities" section below for some common issues.) Cruise lines should be encouraged to send their guests to appropriate tours run by environmentally responsible tour operators.

Waste Discharge & Other Environmental Issues

Waste discharge has been the primary environmental concern in the cruise ship industry. Cruise ships obviously have limited capacity to carry all their waste until they reach their home port, and destination ports have limited incentive (and capacity) to accommodate periodic discharges.

In the last decade there have been numerous cases of cruise lines illegally dumping oily bilge water, garbage, and other waste. In 2001, four major cruise lines were cited in Juneau, Alaska, for illegal wastewater dumping (and another six for air pollution). For instance, in 2002, Carnival Corporation was fined \$18 million and Norwegian Cruise Line \$1 million for deliberate falsification of oily bilge-water record-books. This issue has garnered much attention recently, and, partly due to the embarrassing publicity, all major cruise companies have responded to this issue and have refined and developed new technologies for waste handling, bilge water treatment and other technologies.

Cruise ships produce three major types of waste:

1. Sewage & wastewater may be legally dumped at sea more than 10 miles from land, because the open ocean is capable of assimilating and dealing with human sewage through natural bacterial action. The assimilation process is fastest when the wastewater is dispersed by being discharged while the ship is moving fast, which is now standard procedure on all cruise lines. Within 4-10 miles of land, sewage must be treated and disinfected before discharge. Sewage may not be legally discharged within 4 miles of land.

2. Solid waste (garbage) accumulates rapidly on cruise ships. On average, each passenger generates at least two pounds of trash per day and disposes of two bottles and two cans. Much of this waste is not biodegradable and can injure and kill marine wildlife that eat or become entangled in lines, plastics, etc. Most of the major cruise lines have experienced embarrassing incidents of illegal dumping, and all now have shipboard recycling programs, waste separation, reducing use of plastics, etc.

3. Oily bilge water has been dumped or accidentally spilled from cruise ships in many well-publicized incidents, causing oil slicks and oiling of wildlife. Oily bilge water is a by-product of normal ship operation. Bilge water (water in the lowest part of the ship's hull) becomes



progressively contaminated with engine oil during normal ship operation. When engines are in operation, a large cruise ship produces approximately 8 metric tons of oily bilge water per day. To maintain ship stability and reduce the hazards associated with oil vapors, the water must be pumped out regularly. Ships now pass bilge water through OWS (oily water separator) devices to remove and secure the oil before the water is pumped out to sea. The separated oil can be re-used, or disposed of on shore. All cruise lines maintain log books of oily bilge water disposal.

Some other environmental issues relevant to the cruise line industry:

Construction of cruise ship ports and related infrastructure has a significant impact on certain coastal areas. The building and maintenance are often done by local governments in order to attract cruise ship business. Because the cruise lines themselves do not build the ports, the cruise lines have historically had little accountability if port construction harmed fragile environments. The local governments, for their part, often have few resources for designing conservation-friendly ports. Cooperation and communication between local governments, the cruise industry, and conservation-minded communities and organizations is necessary to ensure that ports are constructed in an environmentally sound manner, with minimal disruption to fragile ecosystems.

Air emissions - Cruise ships use diesel fuel, which generates air pollution that, while small when compared to the global shipping fleet, can produce air opacity, or haze, at frequently visited ports. In response, P&O Princess and some other small cruise lines are switching to newer “enviro-engines” that lower emissions and eliminate haze. Cruise ships in some ports also now shut down engines while in port, connecting to the local energy supply instead.

Ballast water is used to maintain stability on large ships. ***Discharge of ballast water that was taken on board in another environment can release non-native plant and animal species.*** In some locations this has caused significant environmental problems. San Francisco Bay, for example, now has at least 212 non-native species that were introduced via ballast water, and which have now invaded 100% of shallow-water habitats in the area.

Anchor and cable damage - Cruise ships’ large anchors and anchor cables can cause substantial damage on coral reefs. Designated cruise ship mooring locations, as used on the Great Barrier Reef in Australia, can help reduce this problem.

The Cruise Industry as a Source of Funding and Support

Cruise lines have a large stake in supporting the sustainable tourism in the coastal areas that they visit. Increasingly, their passengers want to see clean, healthy coastal environments, want to learn about local communities, and want to travel with a cruise line that is environmentally responsible. In response, many cruise lines now have diverse programs for supporting conservation, education, research and community programs in the coastal environments that they visit. ***MPA managers should be aware that cruise lines may be a potential source of funding support for projects in their MPA and local community.*** Some examples are:

1. Patronizing local sustainable tourism activities.

For example, Cunard cruise line offers a special shore excursion for its passengers in the Panamanian port of Puerto Amador, in partnership with the Embera Indian village. This is designed to help community members maintain their unique heritage and share it with villagers.



Cruise ship passengers travel by traditional canoe to the village, where they meet members of the Embera community who share information about their culture, crafts, and lifestyle. The partnership not only educates visitors, but has also encouraged some members of the younger Embera generation to maintain stronger connections with traditional aspects of their culture.

Many cruise lines also visit MPAs directly. In large MPAs, cruise lines may dock in or near the MPA. Creation of designated cruise ship sites can limit anchor damage and streamline the permitting and fee-collection process. Usually, arrangements are made directly with the cruise line to collect an entrance fee for each passenger (often approximately US\$4 per passenger).

2. Hiring local residents for passenger education.

Many cruise lines now have educational programs for their passengers, and some will hire local community members to come on board for talks or short visits. For example, Holland America Line (HAL) has a variety of programs to enhance environmental understanding among its passengers. On all of its Alaska cruises, the company employs naturalists who give lectures and host environmental discussion groups and bird- and whale-watching programs. Native artisans and local tribe members are brought on board to demonstrate their skills and discuss their culture.

3. Instituting educational programs for local residents or schoolchildren.

For example, in Juneau, Alaska (where cruise ships have struggled with a poor image among local residents), an association of several cruise lines works with the local community in an environmental education program for students from local schools. The program includes tours of ships docked in port, where students learn about the ships' recycling, emissions, and wastewater programs. Princess Cruises takes students to their lower deck recycling center, to see boxes broken down, glass crushed and garbage incinerated. Celebrity Cruises includes the engine room on its tours, to show students where emissions are monitored and teach them about gas turbines. Holland America has provided oceanography classes to local high school students. Additional programs are being piloted in Hawaii and elsewhere in Alaska.

4. Contributing directly to local communities and MPAs

Several cruise lines directly fund environmental programs in coastal parks, communities and MPAs. Celebrity Cruises, for example, supports several conservation and community efforts in the Galapagos, paying for a high-speed Zodiac for park members to use in patrols, and donating to a local foundation (Fundacion Galapagos) that recycles plastics and hires local fisher people for shore clean-ups. Celebrity Cruises also sponsors an agricultural engineer to assist local farmers in their efforts to grow local produce, and invites local school children and teachers on board to join the cruise and learn more about their own islands, and sponsors local programs in sustainable hotel management.

As another example, the Disney Wildlife Conservation Fund collects donations from Disney's cruise ship passengers for conservation, and use the donations to fund grants to non-profit organizations for conservation projects world-wide. The fund is supporting projects on sea turtles, conservation of the Bahamas parrot, the Jamaican Iguana Recovery Program, coral reef preservation, etc. This fund also has a Rapid Response Fund as a source of rapid funding to coastal communities in times of crisis, such as after hurricanes.

Exercise: Attracting cruise lines to Southeast Asia

1. In a large group, discuss where cruise ships currently go in Southeast Asia. (If technology permits, visit the websites of the three major cruise lines and see which Asian cruises are currently offered.) Set up a large map of the Southeast Asia to refer to during this discussion. Do you know which cruise lines currently go in the Southeast Asia, how often, and where their major



ports are? How could you find out? Mark major cruise line ports, if known, on the map.

2. Discuss whether it would be a good idea to try to attract more cruise line business to the MPAs to Southeast Asia. Based on your attractions and infrastructure inventories performed earlier, and the cruise line ports you have just identified, are there locations that cruise lines could be visiting, but are currently not visiting? Would the environmental and cultural benefits outweigh the costs?

3. Brainstorm ways to attract funding support from cruise lines for conservation or community projects in the MPAs of Southeast Asia as a whole. (*Information on many programs is available in the brochure "From Ship to Shore", published by Conservation International.*)

4.4 RECREATIONAL ACTIVITIES

Guidelines for Recreational Activities

More so than in the case of cruise ships and hotel operators, recreational activity providers help tourists interact directly with flora, fauna and environment of the seascape. They are in a prime position to help or hinder tourists in the ways they affect particular species and habitats. A critical step is to facilitate training and information to local recreational activity operators about the particular impacts of their activity, and particular issues of certain species or waste disposal. A good initial goal is for the tour operators to educate their on-site staff, and, ultimately, educate the tourists.

Handout 4.11 - 13 Questions for Marine Recreation Providers

Handout 4.12 - Visiting Mangroves & Coral Reefs

Anchoring

Boat anchors and chains can cause extensive physical damage to the underwater environment. Coral reefs are especially vulnerable. Repeated anchoring causes extensive physical scarring to reefs, and can also kill or weaken corals by clouding the water with sediment, which chokes corals and blocks out sunlight. Anchor damage can also occur not only on reefs, but also on shipwrecks and other maritime heritage sites. Boats swinging around from anchors can also mow down seagrass beds.

Dive operators are typically very willing to help address this problem, because anchor scars on reefs obviously reduce the reefs' appeal for tourists, and directly threaten the tour operators' livelihoods.

Damage can be greatly reduced through a mooring buoy program at popular coral reef sites. Companies that rent boats directly to tourists can help by providing information to the tourists on basic seamanship, navigation and the locations of the mooring buoys. This can include education regarding the damage that anchors can do to coral reefs, and a waterproof map of the location of the buoys at popular snorkel and dive sites. If mooring buoys are not available, another alternative is drift dives, where no anchor is dropped.



Boat operations

Propeller wash and boat wakes in shallow-water environments disrupts sedimentation, particularly in coral reefs, sea grasses and mangroves. Boat operators should:

- Stay within designated channel markers and away from reefs
- Obey speed limits to avoid hitting marine mammals
- Avoid dark water areas that may be important shallow ecosystems
- Know how to read & interpret a navigational chart
- Use “gentle” and slow motoring in shallow areas
- Educate tourists about good boating practices

Boat maintenance

Hazardous materials such as fuels and oils can threaten the health of coral reefs and other environments in popular destinations. Though one small leak from one boat may not seem like much, many small leaks from many boats in a limited area can stress corals and make them vulnerable to disease. Encourage regular boat maintenance, particularly regarding engines, fuel tanks and other potential leakage areas.

Antifouling paints contain known carcinogens and heavy metals. These toxic paints slowly flake off of boats and settle on reefs as small chips that eventually acquire a film of algae, are eaten by herbivores. The heavy metals and carcinogens thus enter the food chain and are eventually concentrated in the bodies of carnivorous fish, which are in turn eaten by humans. Dumping of unused paint in bulk can directly kill animals. Encourage the use of antifouling paints made from biodegradable fuels, and encourage proper disposal of unwanted paints and chemicals, both at-sea and at dry docks.

Older two-stroke engines are inefficient and discharge as much as 30% of the fuel, unused, into the environment. Encourage replacement of older models with the newer, much more efficient four-stroke models. An alternative is retrofitting for biodiesel as an alternative fuel source. If a two-stroke engine must be used, use alkylate petrol.

Sewage & garbage disposal

Discharge of raw or partially treated sewage into coastal waters is obviously not environmentally sound. Sewage should be disposed of at land-based pump-out facilities. If pump-out facilities are not available, boats should treat sewage mechanically and with nontoxic biodegradable chemicals. Boats should move as far offshore as possible before pumping out. Alternatively, boats can use self-contained toilets, which can be removed from vessels and dumped at onshore facilities. Remind passengers to use land-based toilets before heading out. Particularly sensitive environmental areas can be marked as No Discharge Zones.

Garbage on shores and in water is unsightly and threatens health of many forms of marine life, as well as of human beach-goers. Plastic objects, fishing line, cigarette butts and styrofoam debris are mistakenly consumed by turtles, seabirds, fish and marine mammals. Fishing lines, nets, and plastic rings entangle and kill many animals. On boats, garbage bins should be contained or kept inside to minimize the chance of garbage blowing overboard. Where possible, use products made of paper instead of Styrofoam or plastic; paper is more biodegradable. Always try to avoid loss of long non-degradable filaments of any type, such as six-pack holders and lost fishing lines and nets; these frequently entangle and kill animals.

Snorkeling & scuba diving

Corals are notoriously vulnerable to physical damage. Inexperienced or simply over-abundant snorkelers and divers frequently crush and break corals and stress wildlife. Most damage occurs when snorkelers or divers lose control in the water (i.e. grabbing coral while fighting a current), walk in a shallow area, or try to touch wildlife. Explain to tourists the importance of following a no-contact rule with corals and other animals. Offer buoyancy refresher courses to enable divers to better maintain control in the water, and remind them not to stand or walk in shallow areas and



not to grab coral for control. If there are simply too many divers, limit diver numbers by establishing a diver carrying capacity for the area.

Recreational fishing, seafood consumption & souvenir collecting

Many food fishes and invertebrates are being harvested at unsustainable levels from near-shore and coral environments. Tourists are often unaware that a seemingly harmless purchase of a souvenir or food dish can have serious environmental consequences. Many popular game fish and other marine species have declined significantly due to overfishing. This includes many species of groupers, jewfish, jacks, marlin, tuna, snappers, lobsters, and crabs. Overfishing directly threatens the ecological integrity of coral reefs and other marine environments throughout the world. Similarly, over-harvesting of reef fish, sea urchins, shells, coral pieces, and other marine animals to sell as ornaments will contribute to the decline of coral reefs.

Marine recreation providers should not harvest rare, threatened, or endangered species to serve as seafood. Fishing charters can protect healthy fish stocks by using catch-and-release programs, and educating tourists about which species are rare and to be avoided. In general, tourists should be discouraged from collecting “souvenirs”. For those tourists that insist on a physical souvenir, the best souvenir option is “sea glass” (glass litter that has been buffed by wave action to form blue, green, and white pebbles), since in that case tourists are actually removing litter.

Marine wildlife viewing

Marine wildlife such as turtles, dolphins and whales can be easily disturbed. Note that species that appear to be unaffected may, in fact, be disturbed in subtle ways that may not be apparent to a tourist. Research has shown, for example, that animals that are apparently undisturbed by humans may have elevated levels of stress hormones and may alter their behavior in subtle ways, e.g. whales surrounded by boats may dive more often and spend less time resting at the surface, and sea turtles may feed less.

The most appropriate way to view marine mammals is at a slow speed from a distance that does not change the animal's behavior, such as its rate of feeding, the direction of its swimming, and its intervals between dives. Other guidelines:

- Avoid approaching animals in ways that make them change direction or speed.
- Avoid approaching animals head-on.
- Never chase an animal. If an animal swims away, let it go.
- Resist the temptation to approach mother/calf pairs too closely
- Resist the temptation to continually creep closer.
- 100 meters is a good minimum distance for watching large whales.
- Do not touch animals. It may cause them to abandon feeding or breeding grounds.
- Do not feed wildlife. It changes their behavior, trains them to become dependent on humans for food, and is often not nutritionally sound. (An exception is bird feeders at hotels, which can be done in a nutritionally sound way, and is generally not disruptive to the birds. The birds can also become “conservation ambassadors” for hotel guests who might not have gone on a wildlife tour.)
- Divers should never “ride” a sea turtle – it needs to be able to surface to breathe air.

Terrestrial wildlife viewing

For land-based tours such as of sea lion colonies, seabird colonies, etc., blinds and viewing platforms are an excellent way to provide tourists with a clear view, while also protecting animals and vegetation. Bird-watching tourist groups will seek out areas that have elevated blinds by wetlands, mudflats, and ponds. Just as with viewing of marine wildlife, terrestrial wildlife should never be touched, chased, or approached too closely. A few other guidelines for terrestrial habitats:



- Never disturb a on-shore nest of any animal (sea turtle, bird, etc.). Nests on beaches, such as sea turtle nests and some shorebirds, are particularly vulnerable and may require closing of beaches, or roping-off of nesting areas.
- Do not walk through colonies of breeding seabirds if the birds are not habituated to humans. The disruption can result in territory battles, breakage of eggs, and death of chicks.

Exercise: Develop recreational guidelines for your MPA

In small groups, describe the primary marine recreational activities that occur in your area, or you think could be a useful part of a sustainable tourism project in the future. What negative impacts could these activities have on species, habitats aquatic and terrestrial environments? In consultation with other group members, write a list of the major recommendations you would make to recreational operators in your area.

4.5 ZONING FOR SUSTAINABLE TOURISM

Management Objectives & Assigning of Zones

The appropriate zoning of a marine protected area is fundamental to all other management strategies. Zoning is a mechanism for assigning overall management objectives and priorities to different areas (zones) within the site or protected area. By assigning objectives and priorities to these zones, planners are also defining what uses will and will not be allowed. These parameters are usually based upon the characteristics of the natural and cultural resource base, the protected area objectives and political considerations. The decision to guide public use using sustainable tourism principles is a type of policy decision that affects zoning. Managers guide their day-to-day decisions about the area's operations based in part upon the zoning structure.

The initial zoning for an MPA is usually determined in a General Management Plan (GMP). However, although sustainable tourism may be identified in the GMP as the desired public use, current information may be insufficient to define where public use zones should be located. For example, a well-visited reef in an area may be an obvious choice for a public use zone in the GMP process, but it may not be until after a full evaluation takes place that more worthy attractions outside of pre-established public use zones are identified. Community members and tour operators might help identify important but previously unexploited attractions, such as a seamount that attracts pelagic species and divers.

Consequently, it may be necessary to modify the initial zoning of a marine protected area. Of course, it may be that some potential ecotourism attractions should not be made accessible to visitation because of their vulnerability to erosion, water quality impacts or destruction. In this way, zoning for sustainable tourism should be totally integrated into the overall zoning scheme for an area and should be compatible with the site's management objectives as applied to those zones.

The zoning system will determine the natural conditions for which the different sectors of an area will be managed. Some zones may be managed to maintain a very fragile ecosystem where even



highly managed, low volume visitation may not be an option. However, well-managed sustainable tourism activities provide managers with more options, and thus sustainable tourism might be permitted in some zones where conventional tourism would not be.

The importance of diversity in zoning

Providing opportunities for a range of visitor experiences is an important part of planning for most MPAs. One might ask, “why should a MPA provide opportunities for more than one type of experience?” Visitors come to marine reserves for very different and sometimes conflicting reasons. By providing a diversity of settings, visitors can theoretically select which experience(s) most closely match the reason that they came to the park. Also, planning for a diversity of experiences helps to avoid the conflicts that often occur among visitors who want different things from their visits.

MPAs normally provide opportunities for a diversity of experiences by providing a variety of settings or environments for visitors. For example, many MPAs have coral reefs and also open-water environments, and may also have terrestrial habitats such as beaches, sand dunes, mangrove forests or seabird/marine-mammal colonies. These different settings provide a wide range of potential visitor experiences.

In the past, MPA managers and planners did not try to define the types of visitor experience opportunities that different areas in an MPA could best provide. It also was not recognized that changes in the levels of visitor use and in behavior, as well as visitor impacts and management reactions to those impacts, affect the diversity of visitor experiences in the MPA. Most visitors went to areas in the parks with special attractions (e.g., coral reefs for snorkelling) and/or to easily accessible areas. MPA managers and planners largely responded to increasing visitor use levels with what were believed to be appropriate infrastructure and management policies. For instance, sites often were altered to accommodate more visitor use. But, the increased levels of use and reactive management action frequently changed the characteristics of the settings and the visitor experience.

Zoning allows MPA managers to take a different approach from what was done in the past.

Zoning can be prescriptive and proactive about

- what visitor experience opportunities are provided in a MPA
- what the essential elements of those experiences are
- how much area should be allocated to various visitor experience opportunities
- where in the MPA should the opportunities be provided.

A zoning framework also is intended to ensure that a *diversity* of experiences is available in a park. It is not intended to ensure that a diversity of experiences will be available at every attraction in the park, nor is it intended to protect all experiences in all zones. It may not be possible to provide opportunities for a diversity of experiences at unique attractions, such as at a sea turtle nesting beach.

Defining the Zoning Scheme

The first step to defining a zoning scheme is to evaluate the current situation:

- Does the management plan establish a zoning scheme? Is it adequate?
- Can existing or potential negative visitor impacts be eliminated via good zoning?
- Can existing or potential visitor use conflicts be eliminated via good zoning?



If the preexisting zoning scheme does not adequately meet the needs for sustainable tourism development, then changes in the zoning scheme will be needed.

If a marine protected area's conservation management objectives can continue to be met following the establishment of a proposed visitor site, or if the visitor site's negative impact is outweighed by the benefits it will generate, then it will generally be feasible to overlay preexisting zones with a visitor or public use zone. If conservation management objectives are threatened by establishing a visitor use zone (e.g., if the nesting or feeding area of a rare bird species would be disrupted), then some potentially attractive sites should not be established.

Handout 4.13 - Pointers on Developing Zones for MPAs

Basic Types of Zones for MPAs

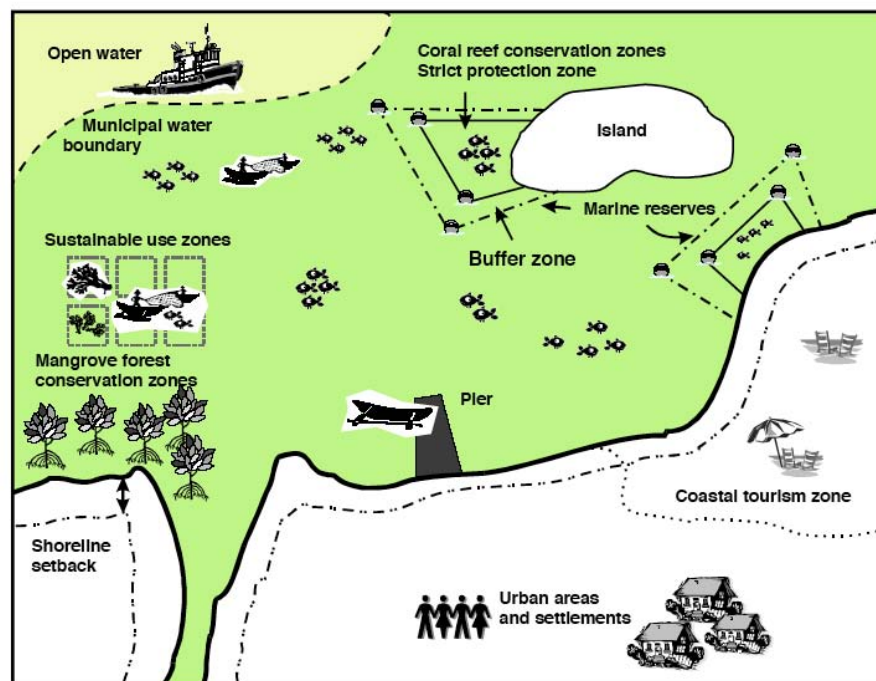


Figure 11: Illustrative zoning and resource use plan for the coastal area and municipal waters (not to scale)

Source: Carsten et al. 2002

If a new zoning system needs to be designed, the first step is to delineate the **core zones**, or **sanctuaries**, that can tolerate only a minimum of human use. These are habitats that have high conservation value and are vulnerable to disturbances. No disturbing uses should be allowed. Core zones should be large; they should include as large a variety of habitats as possible, and be large enough to sustain a breeding population of the key species. Small areas of habitat will have fewer species than larger ones, and thus, a large core zone may be necessary to protect the majority of species. For example, a 300-hectare coral reef of the Chagos Archipelago in the Indian Ocean contained 95% of all the coral genera found in the archipelago, but smaller reefs, or smaller sections of reef, had lower coral diversity. The number of coral genera decreased as reef size decreased. Also, certain genera were found only on reefs larger than a certain minimum area.



Around the core zones can be **buffer zones** or **extensive use zones** where more liberal, but still controlled, uses may be allowed - for example, trails and hiking on land, or, in water, local fisher people using traditional, non-intensive fishing gear. Finally, high-impact visitor uses should be concentrated into **intensive use zones**, such as visitor centers, restaurants, snorkeling areas, waterskiing, sport fishing, etc.

Intensive Use Zones are usually quite small in area, representing less than one percent of a protected area's territory. Extensive Use Zones are generally larger but still represent only a minor part of the site's overall territory. Other zones may permit some ecotourism activities on a highly limited and controlled basis, frequently requiring a permit.

Separating User Conflicts

MPAs often border on inhabited coasts whose residents are heavily dependent on fish, shellfish and other marine resources for food and livelihood, but who damage coastal habitats or deplete resources in their pursuits. In MPAs, an especially common issue is conflict over local fisher people's rights who have traditionally fished in the reserve. Simply denying such residents access to the MPA is seldom a viable or desired option, often leading to resentment of the MPA and lack of compliance with MPA borders or regulations. A better approach is a form of management that enables both continued local use and the safeguarding of ecologically valuable elements. A common solution is to award local fisher people *exclusive* fishing rights to a designated area (i.e., non-local fisher people are not allowed to fish there), to compensate them for any loss of fishing rights elsewhere. Some other solutions are to offer management responsibility in compensation for fishing rights, or to offer some other compensation such as low-cost loans for improvements in gear or boats.

When people's traditional rights may be taken away, it is best to offer appropriate compensation, and to include them in the decision-making process.

Zoning can be also used to separate tourism uses. Within the tourism areas, zoning can be used to separate incompatible recreational activities - bird watching vs. hunting, waterskiing vs. snorkeling - to increase the enjoyment and safety of different pursuits. For example, in Holetown, Barbados, the underwater park has four different zones: a central Recreational Zone (containing a snorkeling trail), bordered by a Northern Water Sports Zone and a Southern Water Sports Zone where waterskiing, jet skis, etc. are allowed. Farthest to the north, and furthest separated from the recreational zone, is a Scientific Zone that functions as a core sanctuary area that can be studied by researchers.

Due to these potential user conflicts, it is essential to include local fisher people, marine recreational tour operators, and other stakeholders in the process of developing a zoning plan. Often, local fisher people and tour operators already have informally subdivided coastal areas for different uses; these pre-existing arrangements may be useful in the process of developing a zoning scheme.

Case Study: Florida Keys, U.S.

If possible, inspect the zoning information and maps for the Florida Keys National Marine Sanctuary (U.S.) at:

<http://floridakeys.noaa.gov/regs/zoning.html>

(Click on "Visitor Information" to see an interactive zoning map.)

*Handout 4.14 - Florida Keys Zoning Map*

High-impact and Low-impact Tourists

Tourism encompasses a large number of potential activities ranging from ecologies to trekking. While planning for an tourism site, you should decide toward what part of the tourism market you wish to orient the site's activities. The wide spectrum of potential tourists includes some who will arrive with full understanding of what it means to be ecologically sensitive, while others will need to be educated on site.

“High-end” visitors will expect fairly comfortable facilities, while more adventurous or lower spending visitors will seek or settle for more basic facilities. The type of visitor you wish to have at your site can determine the types of tourism activities you plan for as well as the degree to which they are developed. Traditionally, most protected area administrators have opted to manage for a wide variety of visitors, although the facilities they provide generally are geared towards the more basic visitor demands, e.g., campgrounds, trails, small-scale food service. High-end visitors usually find lodging and food service outside the protected area. As a general rule, ***high-end visitors spend more money but also require more and better quality facilities that have the potential for causing more environmental impact***. The lower-end visitor spends less money but requires only basic services and infrastructure. The more adventurous and lower-end visitor is more likely to utilize sections of the protected area that are distant and relatively undeveloped.

If sustainable tourism is to be fully implemented, protected area managers must ensure that tourism activities are low-impact and extremely well managed. If these conditions are met, then tourism significantly widens the scope and locations for public-use activities. High-end visitor infrastructure may need to be located in a separate zone to avoid possible conflicting uses. Planners and managers must balance the need to generate income with the potential negative impacts and positive economic and educational impacts that can occur with tourism.

Remember that a zoning system is not a permanent fixture. Like any plan, it should be modified as conditions change.

Zoning Attributes & Format

When determining zones, one should take into consideration their unique biophysical, social and administrative/management factors.

Biophysical Attributes

The natural resources of a zone should be described in terms of their sensitivity and ecological importance:

- The abundance and density of unique, endangered, endemic or charismatic species that may be important for the zone should be noted.
- How natural or intact is the zone, and what evidence of human impact is there?
- How much scenic beauty is in this zone?
- What distance from human habitation or difficulty of access is involved? What sorts of human mobility will be allowed?



Social Attributes

- Given the biophysical limitations, what type of experience do you wish to offer visitors or other users in the zone?
- What user density do you wish to provide? What would be the mix of different types of visitors (e.g., national visitors, international visitors, local people, scientists, etc.)?
- What kinds of norms do you expect to govern group movement (e.g., distance, length of stay in visitor sites, waiting time before going to a site, etc.)?
- What do you expect to be the group sizes, number of groups per day, types of use and equipment that would be permitted in the zone?
- What skill levels would be required before a visitor would be allowed to enter the zone? What are the risks associated with entering the zone?

In zones where local residences are near visitor areas:

- What are the rules for tourists?
- Are they allowed to enter the areas where local residents live (i.e., do communities want visitors in their homes and fields)?
- Do local residents prefer that their photographs not be taken in these areas (or that a fee be collected for photographing)?
- Do local teachers prefer that tourists not visit nearby schools during class time?

In general, what activities are appropriate for the zone? Such zoning can give local residents the ability to control tourist activity so that there is the desired balance of privacy versus interaction.

Administrative Attributes

In order to distinguish between the experiences offered and the permitted uses in the different zones, you must describe the necessary levels of protection and management in each zone and the rules and management actions needed to effectively control the types of activities you wish to have take place there.

- What degree of autonomy will visitors have in the zone?
- Will they need permits? Reservations?
- Can they leave the trails?
- Do they need a guide?
- Can they stay as long as they want? Can they stay overnight?
- How much patrolling will there need to be in the zone?
- What kinds of infrastructure are permitted in the zone? (trash disposal, signs, trails, campsites, campfires, etc.)

Zoning Format

After considering the various attributes the zoning scheme should have, the zones should be defined on a map of the area and described. Normally, a zoning scheme includes zones with a range of visitor-use levels. The following format has proven to be a useful one.

Name of the zone: The name should appropriately describe the type of activity that is permitted in the zone, e.g., intensive use, extensive use, primitive use, wilderness, moderate use, etc.

General objective: What are you trying to accomplish with this zone? With regard to sustainable tourism, what general sort of visitor experience are you trying to provide? How does the zone reflect the site's general management objectives?

Zone description: The description should include a synopsis of the various attributes that will characterize the zone: biophysical, social and administrative.

Zone boundaries: This section should describe the location(s) of the particular zone, if possible giving precise boundaries.



Management rules, regulations and policies: Indicate what specific rules, regulations and policies are needed to govern visitor use of the zone, e.g., use of guides, skill levels, permits, camping, use of soap, campfires, group size, etc.

All of the above must be communicated effectively to visitors so that they understand the “ground rules.” A proposal for the Galapagos National Park (see handout) represents two basic concepts for sustainable tourism zoning.

1. Zoning location should be such that zones of intense human use should be buffered by other zones of gradually decreasing use, i.e., primitive or wilderness areas should normally not be adjacent to zones of intensive public use.
2. Zoning for sustainable tourism should, when advisable, provide for a wide spectrum of visitor activities, from intensive use where visitor encounters will be high, to low use where visitor encounters will be very infrequent. This allows visitors with differing expectations and needs to find satisfactory experiences in the sustainable tourism site.

Handout 4.15 - Zoning Format Matrix

Exercise: Zoning for different visitor experiences

Working in small groups, identify the range of potential different visitor experiences in your MPA. Then, using the accompanying zoning matrix handout, create a series of different potential management zones. How do these compare to actual zones in the MPA? Are different types of experiences clustered or spread across all zones? Are there any potentially valuable experiences/uses that do not have a “home”? How do visitor experiences relate to existing or potential resident use of the same areas?

Case Studies

Handout 4.16 - Zoning in Galapagos & El Salvador

Handout 4.17 - Turtle Islands

Case study: Kenya

In Kenya, the four Marine National parks are adjacent to or surrounded by Marine National Reserves. Tourism activities (glass-bottom boats, snorkeling, diving) are permitted in the Parks, but all extractive activities are prohibited. The Reserves are open to fishing by traditional fishers using approved methods. The Parks function as no-take zones for replenishment of fishing grounds in the adjacent Reserves and beyond. By way of additional compensation for their loss of access to fishing grounds now in the Parks, local fishers have exclusive rights to fish in the



Reserves - recreational, tourist, and non-resident fishing is prohibited in the Reserves and enforced by the management authority.

Handout 4.18 - Bunaken, North Sulawesi

Handout 4.19 - Establishing a tourism zoning system

Discussion: Zoning in your MPA

In small groups for each MPA, review the information on zoning from previous modules, the current zoning system used in your area (if any), the maps of attractions & infrastructure that you created in the assessment module, and the potential zones you created in the preceding exercise.

Looking over all of your information, do you have ideas for improvements in your zoning system for sustainable tourism use? If possible, consult with tourism industry participants (hoteliers, tour operators, etc.) who will likely have useful ideas about areas for lodging, small tour groups, large tour groups, etc.

Create two new acetate overlays for your MPA: the current zoning system (if any) and your desired zoning system. Present to the large group (5 minutes per MPA).

Consult the handout for a helpful process in establishing a tourism zoning system. You may not have access right now to all the types of information listed in the handout, but develop a preliminary plan with the information that you have.